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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,561	12/18/2001	Seppo Rousu	872.0106.U1(US)	2675
29683	7590	04/12/2006	EXAMINER	
HARRINGTON & SMITH, LLP 4 RESEARCH DRIVE SHELTON, CT 06484-6212			NGUYEN, DAVID Q	
			ART UNIT	PAPER NUMBER
			2617	

DATE MAILED: 04/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/023,561	Applicant(s) ROUSU, SEPPO	
	Examiner David Q. Nguyen	Art Unit 2681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 02/16/06 have been fully considered but they are not persuasive.

In response to applicant's Remarks on page 7, applicants argue: "Wilcox et al. do not disclose wherein at least two modes operate within at least one common range frequencies, including electronically detuning the resonance of a second antenna of a mobile station such that the resonance of the second antenna is mis-matched to the first antenna so as to reduce coupling of the transmitted signal from the first antenna into the second antenna".

Examiner respectfully disagrees. Fig. 2 of Wilcox's reference shows a mobile device comprising antenna 214, antenna 224, and the signal circuits 210 and 220. The signal circuits 210, 220 can be transmitters, receivers, or transceiver for radios, cellular telephone radios, walkie-talkies, GPS system or other circuit that transmit and/or receive a signal over an antenna (see col. 4, lines 10-14). Wilcox also teaches: "the second signal circuit 220 can generate signals in multiple frequency bands, and the first parallel circuit 212 can maximize the antenna to antenna isolation. The first parallel circuit 212 can include an impedance matching circuit or other tuning circuit. Alternatively, the first parallel impedance matching circuit may be used to indirectly or directly correct the impedance mismatch between the second antenna 224 and the second signal circuit 220" (see col. 4, lines 32-40). Moreover, Wilcox discloses: "the first parallel circuit 212 can be used to improve the impedance match between the second antenna 224 and the second signal source 220. Because the two antennas 214, 224 are in close proximity with each other, the impedance match of the second antenna 224 is affected by the presence of

Art Unit: 2681

the first antenna 214. The first parallel circuit 212 can create a terminating impedance in the first antenna 214 that adjusts the impedance match in the second antenna 224. It is preferred that active controls be used to perform this function” (see col. 4, lines 55-65).

It is apparent that Wilcox teaches Applicant’s method, wherein at least two modes operate within at least one common range frequencies, including electronically detuning the resonance of a second antenna of a mobile station such that the resonance of the second antenna is mis-matched to the first antenna so as to reduce coupling of the transmitted signal from the first antenna into the second antenna.

In response to applicant's Remarks on page 7, applicants argue: “ It is respectfully asserted that the teaching of Trikha et al., whether viewed alone or in combination with alleged admitted prior art, do not disclose nor suggest the subject claims.”

Examiner respectfully disagrees. Examiner believes that the teaching of Trikha et al. to the method of the admitted prior art in view of Wilcox et al. disclose or suggest the subject claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Wilcox et al. (US 6,920,315 B1).

Art Unit: 2681

Regarding claims 1 and 12, The admitted prior art shows and discloses a method for operating a multi-mode mobile station, wherein at least two modes operate within at least one common range of frequencies (see fig. 2 and page1 line 28 to page 2, line 1), comprising: transmitting a signal from a first antenna circuit of the mobile station in the common range of frequencies (see fig. 2 and page1 line 28 to page 2, line 1). The admitted prior art does not disclose the mobile station comprising at least two antennas; a controller, responsive to a first one of said transmitter circuits transmitting, for electronically detuning the resonance of a second antenna of the mobile station such that the resonance of the second antenna is mis-matched to the first antenna so as to reduce coupling of the transmitted signal from the first antenna into the second antenna. However, Wilcox et al. discloses the mobile station comprising at least two antennas (see abstract and fig. 2); a controller, responsive to a first one of said transmitter circuits transmitting, for electronically detuning the resonance of a second antenna of the mobile station such that the resonance of the second antenna is mis-matched to the first antenna so as to reduce coupling of the transmitted signal from the first antenna into the second antenna (see abstract and col. 5, lines 14-55). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Wilcox et al. to the admitted prior art so that dual mode cellular phones operate in two or more overlapping frequency bands.

Regarding claims 2-3 and 13-14, the admitted prior art also shows wherein the common range of frequencies comprises 1900 MHz; the common range of frequencies comprises 850 MHz (see fig. 2 and page 1 line 28 to page 2, line 1).

Art Unit: 2681

3. Claims 4-11 and 15-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Wilcox et al. (US 6,920,315 B1) and further in view of Trikha et al. (US 6,072,993).

Regarding claims 4-9 and 15-20, the method of the admitted prior art in view of Wilcox et al. does not mention wherein the step of detuning comprises varying an impedance of at least one component that forms a part of the second antenna circuit; wherein the at least one component is comprised of a strip line; wherein the at least one component is comprised of a PIN diode; wherein the at least one component is comprised of a variable capacitance; wherein the at least one component is comprised of a FET diode; wherein the at least one component is comprised of an active component that is put into a passive state. However, Trikha et al discloses wherein the step of detuning comprises varying an impedance of at least one component that forms a part of the second antenna circuit; wherein the at least one component is comprised of a strip line; wherein the at least one component is comprised of a PIN diode; wherein the at least one component is comprised of a variable capacitance; wherein the at least one component is comprised of a FET diode; wherein the at least one component is comprised of an active component that is put into a passive state (see col. 2, lines 20-42 and fig. 1-4 and its description). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Trikha et al. to the admitted prior art in view of Wilcox et al. so that dual mode cellular phones can be designed using electronic parts or chips as designed by designer.

Regarding claims 10-11 and 21-22, the method of the admitted prior art in view of Wilcox et al. does not mention wherein the step of detuning comprises operating at least one

Art Unit: 2681

switch for adding a length of strip line to, or for subtracting a length of strip line from, the second antenna circuit; wherein the step of detuning comprises operating at least one switch for connecting a length of strip line to ground, or for disconnecting a length of strip line from ground. Trikha et al. discloses wherein the step of detuning comprises operating at least one switch for adding a length of strip line to, or for subtracting a length of strip line from, the second antenna circuit (see col. 2, lines 20-42 and fig. 1-4 and description); wherein the step of detuning comprises operating at least one switch for connecting a length of strip line to ground, or for disconnecting a length of strip line from ground (see col. 2, lines 20-42 and fig. 1-4 and description of Trikha et al). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Trikha et al. to the admitted prior art in view of Wilcox et al. so that dual mode cellular phones can be designed using electronic parts or chips as designed by designer.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Phillips et al. (US 6,657,595 B1) teaches sensor-driven adaptive counterpoise antenna system.

Kono teaches radio communication apparatus having two antennas controlled by standing wave ratio.

Vannatta et al. (US 6175334) teaches difference drive diversity antenna structure and method.

Art Unit: 2681

Ollikainen et al. (US 2003/0052824 A1) teaches internal multi-band antenna with improved radiation efficiency.

5. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Q. Nguyen whose telephone number is 571-272-7844. The examiner can normally be reached on 8:30AM-5:30PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOSEPH H. FEILD can be reached on (571)272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2681

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David Nguyen



JOSEPH FEILD
SUPERVISORY PATENT EXAMINER